Work Orde July-12-12 12-4		294			*87	294*							Page 1
Revision ID: Item Name: Start Date:	D412-664-2 Crosstube Aff 7/19/12	Start Qty: 1.00		*1*	Accept	*N900	ID:	1100)*	Setup	Start Stop	*N *N	S1* S2*
Required Date:	8/1 !/12	Req'd Qty: 1.00)	*1*	•	Customer:							
Approvals:	Process Pla	an:	Date:		Tooling:	D	ate:			Run	Start	*N	R1*
	QC:		Date:_		SPC (Y/N):	D	ate:				Stop	*N	R2*
Sequence ID/ Work Center ID) di	Operation Description			Set Up/ Run Hours	. Tool ID	Tool #	Plan Code	Accept Qty	t Rej Qty		Reject Number	Insp. Stamp
Draw Nbr	Re	vision Nbr											
D412-664-243	E/I	DĘO	.74 .	' ስ~	. 8					•			
*100 *100* DC Document Control	•	DOCUMENT CONT Memo Photoco	-	create labels	0.00 0.00 s as per PPP D412-664-2	0AS 13 -83 03 CHG 008	1				M	W (2 W7/:
	, :					·							
*110 *110*	·	Packaging			0.00					1		17	-ブ-フェ
Packaging		Memo			0.00				1	_)/ [16	10
Packaging						4	•						*
				i.									• •
*120		BENDING MACHIN	NE - CROSSTU	JBES	0.00					401		\ .	
CNC Bend 2		Memo			0.00				7	- /-	1	1	フーウー
CNC Alpha 160 Ben	nder 🛧 P	Bend tul		D412-664-2	43 using CNC bender pro	ogram 412-aft and				_/	U	٦.	L / 6

NCR:	Yes · /	No

WORK ORDER NON-CONFORMANCE / UPDATE

1+			
DQA: Date:			
12/08/02		**,	
Closed: 1/ Date:	·		

	QA Closed: (K Date: [76])										
Work Orde	er: 8/-	754	/		DISPOSITION			AGAINST DE	PARTMENT		(2
		,			Rework		Skid-tube	Crosstube /	1	Water Jet	Engineering
Part N	10	112 6	069-	<i>703</i>	Scrap	`	Machining	Small Fab	Pro	d. Eng. Coor.	Quality
1					Use-as-is	The	ermoforming	Finishing	Rec/Sto	re/Packaging	Other
NCR N	Io. <u>12</u>	1651		*	Work Order Update		Large Fab	Composite		Supplier	
Root				Descri	ption of work order update	Initia	. A	ction	Sign &		Ta to
Cause	Date	Step	Qty	(or Non-conformance	Chief E		cription	Date	Verification	QC inspector
Doc/Data	- i27.25	120	1	(00	HING APTER BENDING	DA			12/1/25		i.
Equip/Tooling		120	'			اچ/ي	4ccepteble	por affected	850	OAS	
Operator							SR	·	29	196	OAS
Material	ial					1211/1			12/7/25	9-0-	16
Setup						-1.71				25/20157	3-2-
Other	H. I									(0 ,0)	12/4/26
Process	ss							•			11.
Supplier									. ":	1	•
Training									1 :		** -
Unapproved							2.5				
						AULT CA	TEGORY	•	<u>'</u> '		
Landir	ng Gear				General			-	, "	_	_
	Bending		-	_ ^	Bend	Gra	n		Ovalized		Pressure/Forced
	Centre N	lot Conce	ntric to	O/S	BOM/Route	Hard	ware		Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged	Insp	ection Incomplete		Part Incorre	ct	Weld
	Crushed	/Crimped			Burrs	Insti	uctions Incomplete	e/Unclear	Part Lost/M	issing	Wrong Stock Pulled
7	Cuffs Contamination				Contamination	Mai	ntenance		Part Moved		
Heat Treat Countersink						Misl	abeled		Positioned \	Wrong _	
Inspection Strip in Tube Cut Too Short						Mist	ead		Power Loss,	[/] Surge	Other
	Ripples i	n Bend			Drill Holes	Offset					
].	Torque \	Vaves in E	xtrusio	n	Drawing	Out	of Calibration				
	Turning	Sequence			Finish	Out	of Sequence				
	Wave/T	vist in Tul	oe	;	Folio	Out	ide Dimensions				

Work Ord (July-12-12 12:4		294		*872	994*					Page 2
tem ID: Revision ID: tem Name: Start Date: Required Date:	D412-664-20 Crosstube Aft 7/19/12 8/17/12	Start Qty: 1.00 Req'd Qty: 1.00	•	Accept *	*N900 Cust Item I Customer:	1040100)* Set	sup Start Stop	IV	S1* S2*
Reference:			•				D	Stout		
Approvals:	Process Pla	n:	Date:	Tooling: SPC (Y/N):		ate:	Rui	n Start Stop	1711	R1* R2*
Sequence ID/ Work Center II 130 *130 *0C Quality Control	D	Operation Description QC15- Crosstube Di	mensional Check	Set(Up/ Run Hours	Tool ID	Tool # Plan Code	-		Reject Number	Insp. Stamp
140				0.00						٠
140 Crosstubes Crosstubes		2-Ream DT8550 to ensur 3-SCRI	and drill table DT8577 hole to finish size in tu b & DT8551.Check dim re alignment with saddle BE PART # & BATCH WEAR LATEX GLOVE cot for surface damage.		install towers. sing drill Jig es on both cuffs, STUBE*** Deburr	JW RM	12	7	/z- 26	7-26
						,	•			4 33

NCR:	Yes	/ No				WORK ORDER NON	-CO	NFOR	MANCE / UPI	DATE		_	
											QA Closed:	Date	e: •
Work Ord	er:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	•
						Rework			Skid-tube	Crosstube		Water Jet	Engineering
Part	No.					Scrap			Machining	Small Fab	Pro	d. Eng. Coor.	Quality
						Use-as-is			noforming	Finishing	Rec/Sto	re/Packaging	Other
NCR	No.					Work Order Update			Large Fab	Composite]	Supplier	
Root					Descri	ption of work order update		Initial	Act	tion	Sign &		
Cause		Date	Step	Qty	•	or Non-conformance	CI	hief Eng	Desci	ription	Date	Verification	QC Inspector
Doc/Data													*
Equip/Tooling													
Operator													
Material	Ш					•							
Setup	Щ												
Other	Ы					*		40,					
Process	Н												
Supplier	-												
Training	Щ												
Unapproved				<u> </u>			EALL	LT CATE	GORY		<u> </u>		
Land	ing (Gear				General	170	er care					
20.10		Bending				Bend		Grain			Ovalized	Γ	Pressure/Forced
	-	Centre No	nt Conce	ntric to	0/5	BOM/Route	-	Hardwa	ıre	<u> </u>	Over/Under	tolerance	Temperature/Cure
	\vdash	Cracks			"" <u> </u>	Broken/Damaged	-	-1	ion Incomplete		Part Incorre	⊢	Weld
	-	Crushed/	Crimped			Burrs	-	- '	ions Incomplete/	Unclear	Part Lost/M		Wrong Stock Pulled
	-	Cuffs	_,,p-cu.		—	Contamination		Mainte			Part Moved		
	\vdash	Heat Trea	ıt.			Countersink		Mislabe		-	Positioned \		
	-	Inspection		Tube	<u> </u>	Cut Too Short		Misread			Power Loss		Other
	\vdash	Ripples in				Drill Holes		Offset			٦. ٥.,٠٠٠ د ١٥٥٥,		10000
	\Box	Torque W		ytrusio	, 	Drawing		┥	Calibration				

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Ord July-12-12 12:		⁷ 294		*872	294*						Page 3
Item ID: Revision ID: Item Name:	D412-664-2 Crosstube Af			Accept	*N900	040	100)* s	etup Star Stop	171	S1* S2*
Start Date: Required Date	7/19/12 :: 8/17/12	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item :			÷			3
Reference: Approvals:		an:		Tooling: SPC (Y/N):)ate:		R	tun Star Stop	. "IVI	R1* R2*
Sequence ID/ Work Center I	ID.	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
*160 *160* QC Quality Control		QC5- Inspect part compl Memo *** WEAR		0.00 (16) 0.00 (16) EN HANDLING CROSSTU	~ (15/26)				·		
		*									
170				0.00							Λ
170 HandFXtube Hand Finishing Cro	osstu be s	Memo *** WEAR	LATEX GLOVES WHI	0.00 EN HANDLING CROSSTU	JBE***		4.0				M/19019
		1- CLEAN	CROSSTUBE WITH W	ASH'N WIPE						•	
180		Outsource process - ND	T per QSI038 4.1	0.00			÷ (,			-	
180 Outsource2		Memo		0.00	<u>.</u> .		-			1120	7-27
Outsource process	- NDT	*** WEAR	LATEX GLOVES WHI	EN HANDLING CROSSTU	JBE***	,	•••	,	•		

NCR:	Yes	/ No				WORK ORDER NON-	COI	VFOR	MANCE / UPI	DATE		_	
											QA Closed:	Date	•
Work Ord	er:			_		DISPOSITION				AGAINST DE	PARTMENT,	/PROCESS	·
Part I			·			Rework Scrap Use-as-is		Thern	Skid-tube Machining noforming	Crosstube Small Fab Finishing	4	Water Jet d. Eng. Coor. re/Packaging	Engineering Quality Other
NCR I	No.					Work Order Update	ا		Large Fab	Composite	j 	Supplier	
Root					Descri	ption of work order update		Initial	Act	tion	Sign &		
Cause		Date	Step	Qty	(or Non-conformance	Ch	nief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data													
Equip/Tooling													
Operator													
Material													
Setup													
Other													
Process								•					
Supplier	L												
Training													
Unapproved													
							FAUL	T CATE	GORY				
Landi	ng (Gear				General		_			_		_
	L	Bending				Bend	L	Grain			Ovalized	Ĺ	Pressure/Forced
⊕ •	L	Centre No	ot Conce	ntric to	o/s	BOM/Route		Hardwa	ire		Over/Under	tolerance	Temperature/Cure
		Cracks				Broken/Damaged		Inspect	ion Incomplete		Part Incorre	ct _	Weld
	L	Crushed/	Crimped.			Burrs		Instruct	tions Incomplete/	Unclear	Part Lost/M	issing	Wrong Stock Pulled
		Cuffs				Contamination		Mainte	enance		Part Moved		
		Heat Trea	ıt			Countersink		Mislabe	eled		Positioned \	Vrong _	
		Inspection	n Strip in	Tube		Cut Too Short		Misread	£		Power Loss/	Surge	Other
		Ripples in	Bend			Drill Holes		Offset			_		
		Torque W	aves in E	xtrusio	n $ extstyle ex$	Drawing		Out of	Calibration				

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

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Work Orde July-12-12 12:4		294		*872	94*							Page 4
Item ID: Revision ID: Item Name:	D412-664-2 Crosstube Af			Accept	*N9000)401	OC.)*	Setup	Start Stop	*N:	S1* S2*
Start Date: Required Date: Reference:	7/19/12 : 8/17/12	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item ID: Customer:	:						
Approvals:	Process Pl	an:	Date:	Tooling:	Date	:			Run	Start	*NI	R1*
	QC:		Date:	SPC (Y/N):	Date	e:				Stop	*N!	R2*
Sequence ID/ Work Center II	D	Operation Description		Set Up/ Run Hours	Tool ID		Plan Code	Accep Qty	t Rej Qty		Reject Number	Insp. Stamp
100 Packaging Packaging		Inspect for to	LATEX GLOVES W ansit damage of NDT results attack	0.00 HEN HANDLING CROSSTU	BE***						42/	 17/27 (C)
200 *200* QC Quality Control		QC5- Inspect part comple Memo *** WEAR	9	O 0.00 0.00 HEN HANDLING CROSSTU	'BE***							 <u> 1a-01</u> -28
		Inspect for d	amage & ensure resu	Its are as per Dwg D412-664-2	203							
203				0.00				D	1	o - 5	7-28	ζ .
203 HandFXtube Hand Finishing Cro	osstubes	Memo *** WEAR	LATEX GLOVES W	0.00 HEN HANDLING CROSSTU	JBE***			No	le	<u>ታ ፣</u>	- d	

1- PRESSURE WASH AND THEN USE WASH'N WIPE TO CLEAN CROSSTUBE BEFORE CHEMICAL CONVERSION

											DQA:	Date:		
NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UP	DATE			•	
											QA Closed:	Date:	•	
Work Ord	lor.					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	•	
Work Ord	iei.					Rework			Skid-tube	Crosstube		Water Jet	Engineering	
Part	No.					Scrap	4		Machining	Small Fab	-1	d. Eng. Coor.	Quality	
NCR	No.					Use-as-is Work Order Update		1	noforming Large Fab	Finishing Composite	Rec/Sto	re/Packaging Supplier	Other	
Root					Descri	ption of work order update		Initial	Ac	ction	Sign &			
Cause		Date	Step	Qty	(or Non-conformance	Cr	nief Eng	Desc	cription	Date	Verification	QC Inspector	
Doc/Data														
Equip/Tooling	Ŀ													
Operator											l			
Material	L													
Setup														
Other														
Process			ļ										`	
Supplier														
Training														
Unapproved														
							AUI	LT CATE	GORY					
Land	ing (Gear				General		-	-		_		-	
		Bending				Bend	L	Grain			Ovalized		Pressure/Forced	
		Centre N	ot Conce	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure	
		Cracks				Broken/Damaged		Inspect	ion Incomplete		Part Incorre	ct	Weld	
		Crushed/	Crimped.	-		Burrs		Instruct	ions Incomplete,	/Unclear	Part Lost/M	issing	Wrong Stock Pulled	
		Cuffs				Contamination		Mainte	enance	Part Moved				
		Heat Tre	at			Countersink		Mislabe	eled		Positioned	Wrong	_	
	Г	Inspection	n Strip in	Tube		Cut Too Short		Misread	t		Power Loss,	/Surge	Other	

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

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·											
Work Ord July-12-12 12:		294		*872	94*						Page 5
Item ID: Revision ID: Item Name:	D412-664-2 Crosstube Aff			Accept	*N900	040	100)*	Setup Star	I	S1* S2*
Start Date: Required Date Reference:	7/19/12	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item I Customer:	D:					3 /
Approvals:	Process Pla	an:	Date:	Tooling: SPC (Y/N):		ate:]	Run Star Sto	n '' \	R1* R2*
Sequence ID/ Work Center I	D	Operation Description QC7-Inspect Chemical C	Conversion Coat	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
205 QC Quality Control		Memo		0.00 N HANDLING CROSSTU	[BE***						ml 12-07

210

210 SprayPaint

Spray Painting

SprayPaint

Memo

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

Mask underside of crosstube as shown

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per DEO D412-664-243 and QSI 005 4.2

0.00

0.00

PRIME: 121746
Start Time: 7:15
Fininsh Time: 8:00
PAINT: 122381
Start Time: 4:30
Finish Time: 5:15

Al 12-7-29

NCR: Ye	es / No				WORK ORDER NON-	COI	NFORM	JANCE / UP	DATE		_	>
										QA Closed:	Date:	•
Work Order	•				DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part No	0				Rework Scrap Use-as-is Work Order Update		f Therm	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite		Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root				Descri	ption of work order update	Т	Initial	Act	ion	Sign &		
Cause	Date	Step	Qty	(or Non-conformance	Cł	nief Eng	Descr	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved							LT CATE	CORV				
Landing	g Gear				General	-AUI	LICATE	JURY				
Lanuin	Bending Centre N Cracks Crushed/ Cuffs Heat Trea Inspectio Ripples in	at n Strip in n Bend	Tube		Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Instruct Mainte Mislabe Misread Offset	ion Incomplete ions Incomplete/U enance eled	Jnclear	Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned V	ct sissing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
1	Torque V	vaves in t	extrusion		Drawing	1	JOUT OF (Calibration				

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

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Work Ord		294		*872	94*							Page 6	
tem ID: Revision ID: tem Name:	D412-664-20 Crosstube Aft			Accept	*N900	040	100) *	Setup	Start Stop	*N.	S1* S2*	
Start Date: Required Date Reference:	7/19/12 :: 8/17/12	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item l Customer:	ID:							
Approvals:		nn:				ate:		1	Run	Start Stop		R1* R2*	
Sequence ID/ Work Center I	ID	Operation Description QC14- Inspect Spray Pa	int	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reje Qty		Reject Number	Insp. Stamp	
* ?? QC Quality Control		Memo Then,Wrap	in plastic bag to protec	0.00 t from scratches				_/_				<u>M 12</u> 01 29	
230 * 23 0* Crosstubes		Crosstubes Memo		0.00				48		12 -	7 - 3	8c	
Crosstubes	:	Assemble as 1- Install ch up. A/R Prose 2- Lightly s with 41058 3-Install sup D12-664-24	Batch: 1224 EXP: 11 cuff the bonded area us wash 'n' wipe poort with Scotch-Weld	D D412-664-243. Top holes sland paper and a 320 grit sand paper and DP460 and install clamps as DT9024. Torque clamps as	I clean the area								

NCR:	\cdot													
											QA Closed:	Date	:	
Work Ord	er.					DISPOSITION				AGAINST DE	PARTMENT	PROCESS	•	•
Part I	No. _.					Rework Scrap Use-as-is Work Order Update		Thern	Machining noforming	Crosstube Small Fab Finishing Composite	-}	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineeri Qual Oth	ity
Root					Descri	ption of work order update	П	Initial	Action	n	Sign &	· · · · · ·		<u> </u>
Cause		Date	Step	Qty		or Non-conformance	1	nief Eng	Descript	tion	Date	Verification	QC Insp	ector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved									·					
			1,	1	L	F	AUI	LT CATE	GORY		. 	<u></u>		
Landi	ng C	iear			·	General		_				_	_	<u> </u>
	Bending Centre Not Concentric to O/S Cracks Crushed/Crimped. Cuffs Heat Treat Inspection Strip in Tube					Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short		4 '	ion Incomplete ions Incomplete/Unc enance eled	clear	Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned V Power Loss/	ct sissing Vrong	Pressure/Fo Temperatur Weld Wrong Stoc	re/Cure
		Ripples in	Bend			Drill Holes	1	Offset						

Out of Calibration
Out of Sequence
Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish Folio

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Work Orde July-12:12 12:4		294		*872	94*							Page 7	
tem ID: Revision ID:	D412-664-20)3	• • • • • • • • • • • • • • • • • • •	Accept	*N900	040	100)* 5	Setup		*N:	S1*	
tem Name:	Crosstube Aft			•						Stop	*N:	S2*	
Start Date:	7/19/12	Start Qty: 1.00	*1*		Cust Item 1	D:							
Required Date:	8/17/12	Req'd Qty: 1.00	*1*		Customer:								
Reference:								I	Run	Start	*NI	R1*	
Approvals:		n:		_		ate:				Stop			
	QC:		Date:	SPC (Y/N):	D	ate:				•	*N	R2*	
Sequence ID/ Work Center I	D	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reje Qty		Reject Number	Insp. Stamp	
40		QC5- Inspect part compl	eteness to step on W/O	0.00									
* 740 * QC Quality Control		Memo		0.00				/				M12.07.5	3/
250		Pick Kit		0.00								12/3/31	,
250 Packaging		Memo		0.00								12/7/30	94
Packaging		Nemo											
260 *^^^*		QC4- 100% Inspect kits	for completeness	0.00									
26በ ^{oc}		Memo		0.00 PAS	12/04/21						· · · · · · · · · · · · ·		

Quality Control

											DQA:	Date	:
NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UPDATE				
											QA Closed:	Date	<u> </u>
Work Orde	er.					DISPOSITION		-	AGAINS	T DE	PARTMENT/	PROCESS	,
Part I	 No					Rework Scrap Use-as-is Work Order Update		Thern	Skid-tube Crosstube Wachining Small Fal noforming Finishing Large Fab Composite		4	Water Jet d. Eng. Coor. e/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update	Т	nitial	Action		Sign &		
Cause		Date	Step	Qty	1	or Non-conformance	Ch	ief Eng	Description		Date	Verification	QC Inspector
Doc/Data	П												
Equip/Tooling	П												
Operator	П												
Material													
Setup	П												
Other													
Process													
Supplier							1						
Training													
Unapproved						_							
						F	AUL	T CATE	GORY				
Landi	ng Ge	ear			_	General					-	_	
	L	Bending				Bend		Grain		L	Ovalized	L	Pressure/Forced
	Щ	Centre No	t Concer	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
	-	Cracks				Broken/Damaged		Inspecti	on Incomplete	L	Part Incorred	ct	Weld
	Ш	Crushed/0	Crimped.			Burrs	L	Instruct	ions Incomplete/Unclear	L	Part Lost/Mi	ssing	Wrong Stock Pulled
	Ш	Cuffs				Contamination		Mainte	enance		Part Moved		
ł	l li	leat Trea	t		1	Countersink		Mislahe	led		Positioned V	Vrong	

Misread

Out of Calibration

Out of Sequence

Outside Dimensions

Offset

Power Loss/Surge

Other

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Inspection Strip in Tube

Torque Waves in Extrusion

Cut Too Short

Drill Holes

Drawing

Finish

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Work Orde July-12-12 12:4		294		*872	994*							Page 8
Item ID: Revision ID:	D412-664-20)3		Accept	*N900	040	100)*	Setup	Start	*N	S1*
Item Name:	Crosstube Aft									Stop	*N	S2*
Start Date:	7/19/12	Start Qty: 1.00	*1*		Cust Item I	D:						
Required Date:	8/17/12	Req'd Qty: 1.00	*1*		Customer:							
Reference:			•									
Approvals:	Process Pla	ın:	Date:	Tooling:	D:	ate:	_		Run	Start	*N	R1*
•	QC:		Date:	SPC (Y/N):		ate:				Stop	*N	R2*
Sequence ID/ Work Center I	D	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accep Qty	t Re Qt	-	Reject Number	Insp. Stamp
270				0.00								11
270		Packaging									1-	2/2/RIV
Packaging		Memo		0.00				-				
Packaging		******Ensu for applicat	pack for shipping as per tre tube is not packaged if ion time & date ******* e of packaging:		2 hrs, see step 27							1
280		QC21- Final Inspection	- Work Order Release	0.00								07-131
280									N	165	12/	07-131
QC		Memo		0.00					- <i>+</i> -		t	
Quality Control	•											

MC) 12/07/31

										DQA:	Date	:
NCR:	res / No				WORK ORDER NON-O	COI	NFORI	MANCE / UP				•
										QA Closed:	Date	•
Work Orde	er:				DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	*
					Rework	1		Skid-tube	Crosstube		Water Jet	Engineering
Part N	No.				Scrap	1		Machining	Small Fab	Pro	d. Eng. Coor.	Quality
	•				Use-as-is	1	•	noforming	Finishing	1	re/Packaging	Other
NCR I	No.				Work Order Update	1		Large Fab	Composite		Supplier	
Root				1	ption of work order update	1	Initial	l	tion	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Ct	nief Eng	Desc	cription	Date	Verification	QC Inspector
Doc/Data												
Equip/Tooling												
Operator		1										
Material		ļ										
Setup		ļ										
Other Process												
Supplier		ļ.										
Training		1	ł									
Unapproved												
	L		1.		F	AUI	LT CATE	GORY		l	4	,
Landi	ng Gear				General							
	Bending				Bend		Grain			Ovalized		Pressure/Forced
	Centre N	ot Conce	ntric to	o/s	BOM/Route] Hardwa	ire		Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged		Inspect	ion Incomplete		Part Incorre	ct	Weld
	Crushed	/Crimped			Burrs		instruct	ions Incomplete	/Unclear	Part Lost/M	issing	Wrong Stock Pulled
	Cuffs				Contamination		Mainte			Part Moved		
	Heat Tre				Countersink		Mislabe			Positioned V		-
		on Strip in	Tube	<u> </u>	Cut Too Short		Misread	t		Power Loss/	'Surge	Other
	Ripples i			<u> </u>	Drill Holes		Offset					
	Torque \	Waves in E	Extrusio	n	Drawing	L	Out of	Calibration				

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

July-12-12 12:41:40 PM

Work Order ID:

87294

Parent Item:

D412-664-203

Parent Item Name:

Crosstube Aft

Start Date: 7/19/12

Required Date: 8/17/12

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:E04.02.16Reformat; Added D3189-1K/DS

 IPP Rev:F
 06-03-29
 Remove Coments on Pick List
 JLM

 IPP Rev:G
 06.12.08
 per ECN 886
 EC

 IPP Rev:H
 07-04-30
 As per Rev D
 JLM

IPP Rev:I 08-06-12 add comment in seq. 21 DD verified by:EC IPP rev J 11.04.21 DEO D412-664-243-F-1 FC verified DD IPP REV:K 11.10.03 DEO D412-664-243-F-2 DD vert:FC

	664-243-E-1 EC v	rerified DD I	PP REV:I	X 11.10.03 1	DEO D412-664	-243-E-2 DD	verf:EC						
Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN6-40A Bolt		Purchased	No			250	Each	124.0000	4	4		5/	G
				Location		Loc Oty	<u>Lo</u>	oc Code					_
				ST342		124							
					0187	66							•
					0833	4							
					1584	50							
_AN6-41A Bolt		Purchased	No	12	1827	250	Each	65.0000	2	2	2	5 D	
				Location		Loc Oty	Lo	oc Code					
			ė	ST342		65							
				_	0423	35			_/2	29063			
				12	825	30						•	•
AN960JD616 Washer	NAS1149D0663J	Purchased	No	•		250	Each	0.0000	18	18	MI.	2170	8 Sf
D2896-1 Support		Manufactured	i No			230	Each	18.0000	1	1	AB 12	-7-	8 <i>sf</i> 80
				Location		Loc Qty	<u>L</u> c	oc Code					
				LG052		8				.			
				80	860	8			_0)			
				LG053		10			4				
				74	465	10							

												DQA:	Da	ate:	
NCR:	Yes	/ No				WORK ORDER NON-O	100	NFORM	MANCE / UP	DATE				_	
												QA Closed:	Da	ate:	•
114I- OI						DISPOSITION				AGAINST D	ΕI	PARTMENT	PROCESS		
Work Ord	er: –					Daaul	1		cuist Auto a	C	_		Water Je		Engineering
Dort !	Ma.					Rework			Skid-tube Machining	Crosstube Small Fab	_	Dro	d. Eng. Coor	\vdash	Engineering Quality
Part I	۱O					Scrap Use-as-is	1		noforming	Finishing	-		e/Packaging		Other
NCR I	VIα					Work Order Update	1 1		Large Fab	Composite	-	Nec/3to	Supplie	-	Other
i iii	-					Work order opadie	J		zarge i ab	composite [очррис	ш	
Root					Descri	ption of work order update	Ī	nitial	Ac	tion		Sign &	•		
Cause		Date	Step	Qty		or Non-conformance	Ch	ief Eng	Desc	ription		Date	Verification	on	QC Inspector
Doc/Data															
Equip/Tooling															
Operator															
Material	Ш														
Setup															
Other															
Process	Ш														
Supplier	Ц	!													
Training	Ц						1								
Unapproved				<u> </u>	<u> </u>		<u>.</u>					L			
							AUL	T CATE	GORY						
Landi	_				 	General		1		_		1			1
	\vdash	Bending				Bend		Grain		-		Ovalized		<u> </u>	Pressure/Forced
	-	Centre No		ntric to	o/s	BOM/Route	_	Hardwa		-		Over/Under		<u> </u>	Temperature/Cure
	\vdash		•		<u> </u>	Broken/Damaged	<u></u>	4	on Incomplete			Part Incorre		<u> </u>	Weld
	_	Crushed/0	Crimped		<u> </u>	Burrs	_	-	ions Incomplete/	'Unclear		Part Lost/Mi	ssing		Wrong Stock Pulled
ł	1. (Cuffs			I	Contamination	1	Mainte	nance	İ		Part Moved			

Mislabeled

Out of Calibration

Out of Sequence

Outside Dimensions

Misread

Offset

Positioned Wrong

Power Loss/Surge

Other

Countersink

Cut Too Short

Drill Holes

Drawing

Finish

Folio

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Heat Treat

Inspection Strip in Tube

Torque Waves in Extrusion

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

July-12-12 12:41:40 PM

Work Order ID: Parent Item: Parent Item Name:	87294 D412-664-203 Crosstube Aft							Date: 7/19/12 Qty: 1.00	2	Required Date: 8/17/12 Required Qty: 1.00
D3189-1 Chafing Shield		Manufactured	No		230	Each	20.0000	2	2	Al 12-7-30
				Location	Loc Oty		Loc Code			
				FG	4					
				36065	4					
				LG053	16					
				83458	12				<u>) </u>	
				83972	4					
D3595-063-570 RUBBER CUSHION		Manufactured	No		230	Each	145.0000	2	2	Af 12-7-30
				Location	Loc Qty		Loc Code			
				FG	8					
				37971	1					
				42243	7					
				LG	78					
				83294	78					
				MA1052	59					
				71534	1					
				76546	58			(2)	
D412-664-203TRN Crosstube Turning Deta	ıil	Manufactured	No		110	Each	3.0000	1	SH	10-07-24
				Location	Loc Qty		Loc Code			
				LG	3					
				83832	1					
				83835	1		005007	_>		
				85390	1	•	385988	_	1)	

												DQA:	Da	te:	
NCR:	Yes	/ No				WORK ORDER NON-	100	NFORM	MANCE / UPI	DATE		•			·····
									-			QA Closed:	Da	te:	•
Work Orde	er:					DISPOSITION				AGAINST D	EP	ARTMENT/	PROCESS		•
Part f	No.					Rework Scrap Use-as-is		1	Skid-tube Machining noforming	Crosstube Small Fab Finishing			Water Jet d. Eng. Coor. e/Packaging		Engineering Quality Other
NCR I	No.					Work Order Update]		Large Fab	Composite]		Supplier		
Root					Descri	ption of work order update		Initial	Act	tion		Sign &			
Cause		Date	Step	Qty	C	or Non-conformance	Ch	nief Eng	Desci	ription		Date	Verificatio	n	QC Inspector
Doc/Data															
Equip/Tooling											١			1	
Operator '	,														
Material															·
Setup															
Other															
Process															
Supplier											ı				
Training											۱				
Unapproved							1				١				
						F	AUL	LT CATE	GORY						
Landi	ng (Gear				General		_							_
	Bending Bend							Grain				Ovalized			Pressure/Forced
		Centre No	ot Concer	ntric to (o/s	BOM/Route		Hardwa	ire			Over/Under	tolerance		Temperature/Cure
		Cracks				Broken/Damaged		Inspect	ion Incomplete	Γ		Part Incorred	:t		Weld
		Crushed/	Crimped.			Burrs		Instruct	tions Incomplete/	Unclear		Part Lost/Mi	ssing		Wrong Stock Pulled
		Cuffs				Contamination		Mainte	enance	Γ		Part Moved			•
		Heat Trea	t			Countersink		Mislabe	eled			Positioned V	Vrong		
		Inspection	n Strip in	Tube		Cut Too Short		Misread	d			Power Loss/	Surge		Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

July-12-12 12:41:4	40 PM									
Work Order ID: Parent Item:	87294 D412-664-203							Date: 7/19/12		Required Date: 8/17/12
Parent Item Name:	Crosstube Aft						Start	Qty: 1.00		Required Qty: 1.00
MS21042L6		Purchased	No		250	Each	479.0000	6	6	
Nut								C-0	,	P
			1	_ocation	Loc Qty		Loc Code			
			9	ST300	479					
				117677	25					
				118384	3					
				118927	48					
				119075	203			_6		
				120308	200					
MS21920-28		Purchased	No		230	Each	84.0000	4	4	AS 12-7-3C
Clamp(per MIL-DTL-87	783C)									A8 12-7-3C
			į	Location	Loc Qty		Loc Code			
			i	FG	5					
				105884	5					
			I	LG050	21					
			•	116839	2					
				118713	4					
				120054	2			-		
				121067	13					
			I	LG051	58					
				121440	8					
				122204	50			(4)		
MS21920-30 clamp(per MIL-DTL-87	'83C)	Purchased	No	~	230	Each	93.0000	2	2	Af 12-7-30
, ,	,]	Location	Loc Qty		Loc Code			
				LG	30					
			ı	119529	30			(2)	· ·	
•			1	LG051	63					
			,	111258	14					
				121583	49					

NCR:	·													
		•								11111	QA Closed:	Date:		
Work Orde	er:					DISPOSITION				AGAINST DE	PARTMENT	PROCESS		
Part N	٠ . No.					Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other	
Root					Descri	ption of work order update	1	nitial	Acti	on	Sign &			
Cause		Date	Step	Qty	(or Non-conformance	Ch	iief Eng	Descri	iption	Date	Verification	QC Inspector	
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved														
							AUL	T CATE	GORY					
Landi		Bending Centre No Cracks Crushed/O Cuffs Heat Trea Inspection	Crimped. It n Strip in		o/s	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short		Instruct Mainte Mislabe Misread	ion Incomplete ions Incomplete/U enance eled	Inclear	Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned V Power Loss/	ct issing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other	
l	1	Ripples in	ьепа		1	Drill Holes	1	Offset						

Out of Calibration

Out of Sequence

Outside Dimensions

Date: ____

DQA:

Turning Sequence Wave/Twist in Tube

Torque Waves in Extrusion

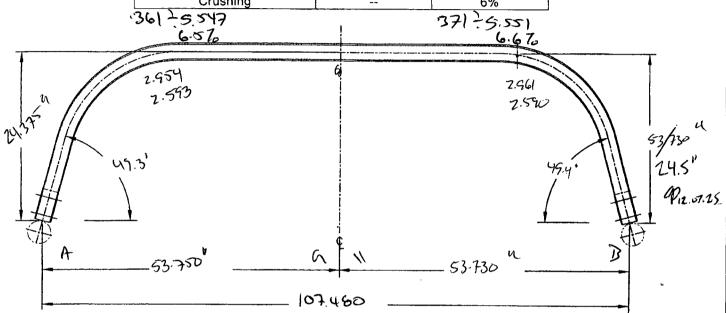
Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DART AEROSPACE LTD	Work Order:	87Z97
Description: Crosstube High Aft (412)	Part Number:	D412-664-203
Inspection Dwg: D412-664-243 Rev: E		Page 1 of 1

Required Dimension	Min	Max
Height	24.24	24.50
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70
Bending Passes	8	
Crushing		6%



6.670					
6.670					
SIGO B = 11 (1 ADSED)					

	010
QC15 Inspection	16
Date	17 17 16

Rev	Date	Change	Revised by	Approved
Α	07.02.06	New Issue	KJ/JM	
В	07.05.08	Dimensions updated per Dwg rev. D	KJ/JLM	
С	10.02.02	Dwg Rev updated	KJ A	0
D	12.04.16	Added bending, crushing dimensions	KJ 👯	IP
<u> </u>	12.04.10	Added bending, crushing dimensions	NJ TY	<u>}</u>

Item	Qty -243	Part Number	Description
1	х	D412-664-243	CROSSTUBE ASSEMBLY (412 HIGH AFT)
2	1	D6009-129	CROSSTUBE
3	2	D3595-063-570	RUBBER CUSHION
4	1	D2896-1	SUPPORT
5	2	D3189-1	CHAFING SHIELD
6	2	D2856-600-1009	ABRASION STRIP
7	4	MS21920-28	CLAMP
8	2	MS21920-30	CLAMP (OR MS21920-32)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTROWBELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

D

С

1) MATERIAL: MANUFACTURED FROM D6009-129

FINISHED LENGTH = 124.100±0.020 (BEFORE BENDING/TRIMMING)

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4 1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2 PAINT OUTSIDE PER DART QSI 005 4.2

TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.

UNITS: INCHES UNLESS OTHERWISE NOTED.

BREAK SHARP EDGES: 0.005 TO 0.010 MAX.

- IDENTIFICATION: SCRIBE DART PART NUMBER "D412-664-243" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: 47.0 lbs (PER IIN-D212-664)
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-30 CLAMPS (OR -32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE THE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT
- 14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035
- 15) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES. NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY **RETURN TO** ENGINEERING **UNCONTROLLED COPY** SUBJECT TO AMENDMENT WITHOUT NOTICE WORK ORDER / MLJ 12/07/13

@ DEO ATTACHED

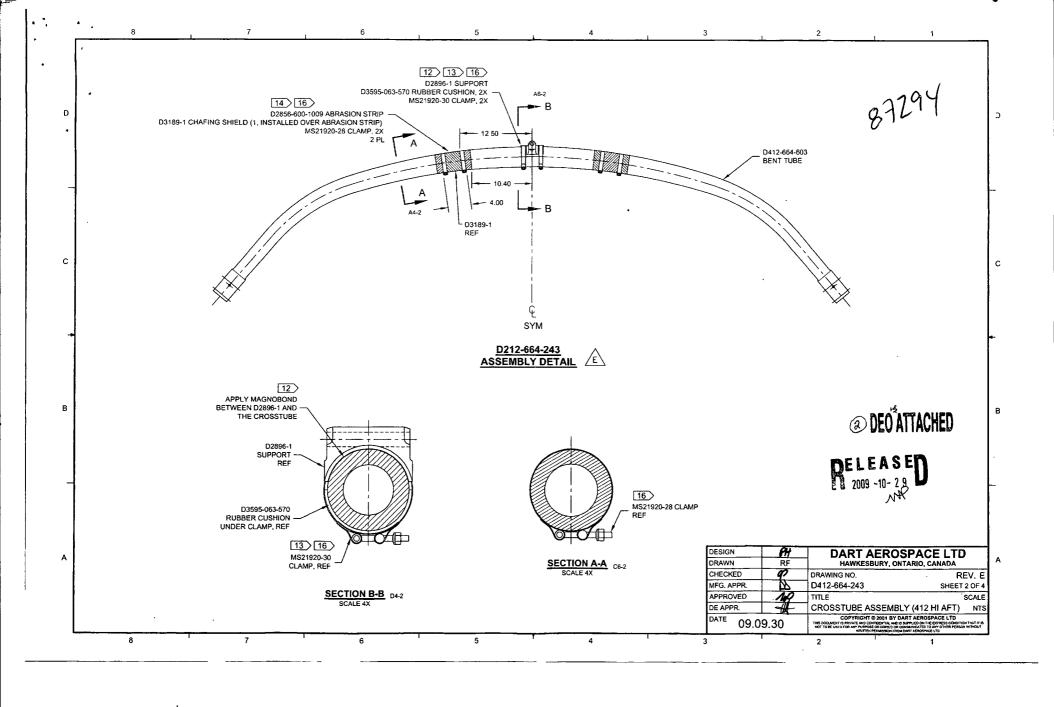
D

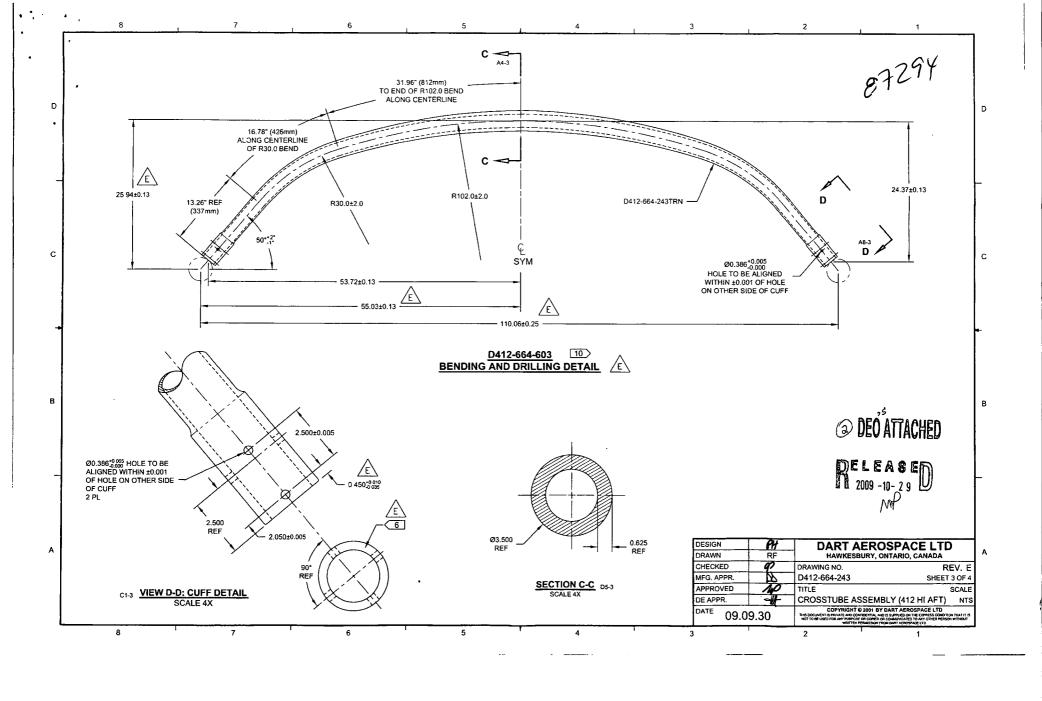
REFORMAT/REVISE GENERAL NOTES; 09.09.30 REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; RELOCATED FLAG #6 PER PAR 08-046 (ZN A6-3): ADD TOLERANCE (ZN B6-3, C4-3, C8-3 & C5-3); MOVED TURNING DETAIL & UPDATED **TOLERANCE TO SHEET 4.** D REMOVE D2732-058, CHANGE TO D3595-063-570 07.03.09 REMOVE D2856-600-1087. ADD D2732-058 & мв 06.10.27 MAGNOBOND 6398, MS21920-32 WAS MS21920-30 ADD HOLES FOR COMPATABILITY WITH BHT/AA 05.02.04 SKIDTUBES NEW ISSUE Α PH 01.10.17 REV. DESCRIPTION BY DATE DESIGN DART AEROSPACE LTD DRAWN RF HAWKESBURY, ONTARIO, CANADA CHECKED DRAWING NO. REV. E MFG, APPR D412-664-243 SHEET 1 OF 4 APPROVED ND. TITLE SCALE DE APPR. CROSSTUBE ASSEMBLY (412 HI AFT) NTS COPYRIGHT © 2001 BY DART AEROSPACE LTD

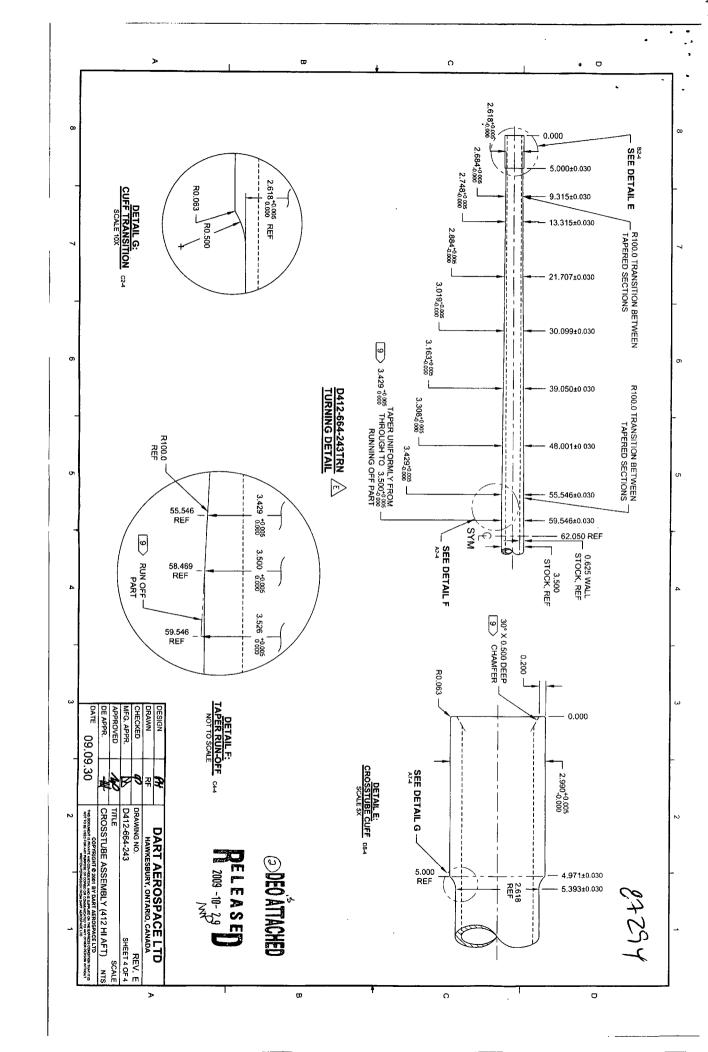
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09.09.30

8







DRAWING NO	D. TITLE	RE\	E DART AEROSPACE LTI	D.E.O. NO.	SHEET NO.	SCALE
D412-664-2	243 CROSSTU	JBE ASSEMBLY (412 HI	(FT) ENGINEERING ORDER	D412-664-243-E-1	SHEET 1 OF 2	NTS
DRAWN	<u></u>	CHECKED AND	MFG. APPR.	APPROVED MAP	DE APPR.	
DATE '	11.03.31	DATE 11/03.31	DATE //.03.31	DATE 11/03:31	DATE 11-03.31	

PURPOSE:

REMOVED ABRASION STRIP IN FAVOR OF A THIN LAYER OF PROSEAL 890.

e7294

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

IS:

Item	Qty -243	Part Number	Description
6	0	D2856-600-1009	ABRASION STRIP

WAS:

6	2 .	D2856-600-1009	ABRASION STRIP

NOTES 2 AND 14, SHEET 1 ARE AMENDED AS FOLLOWS:

IS:

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA)

PAINT OUTSIDE PER DART QSI 005 4.2

AFTER PAINTING, APPLY CLEAR COAT ON HATCHED AREA

14) APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3189-1 CHAFING SHIELD AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D3189-1 CHAFING SHIELD ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.

WAS:

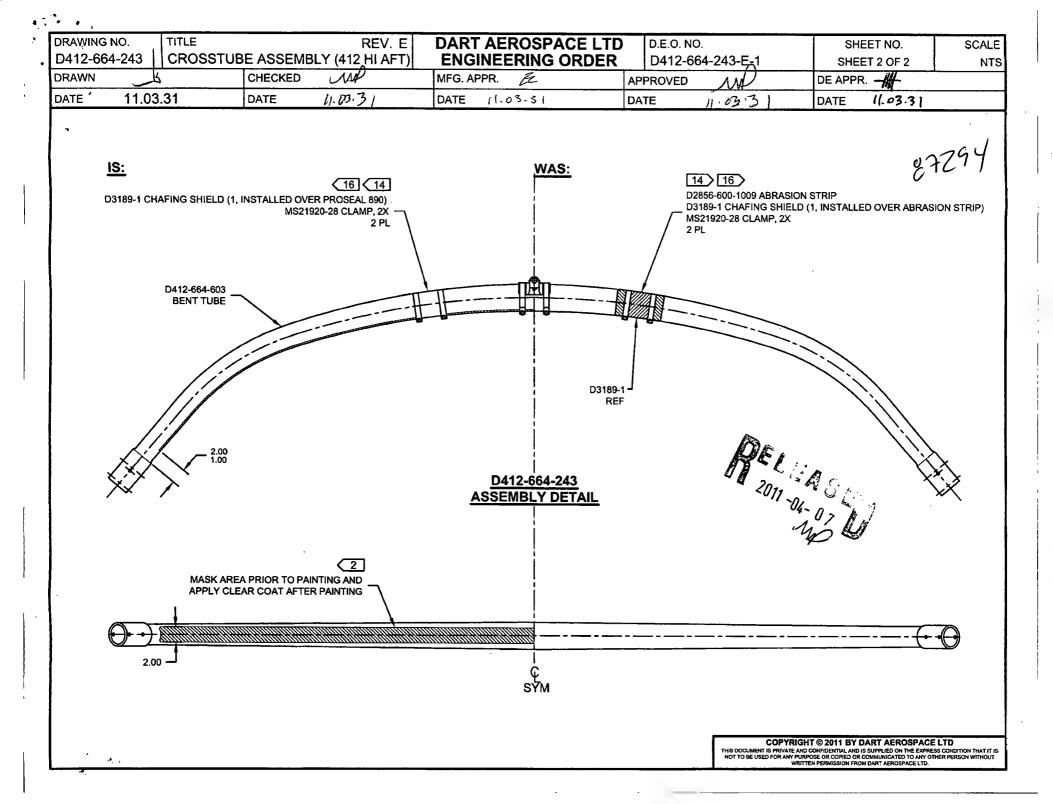
2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2

14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.



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DRAWING N	NO. TITLE	REV.	E DART AEROSPACE LTI	D.E.O. NO.	SHEET NO.	SCALE
D412-664	-243 CROSSTU	BE ASS'Y (412 HI AFT)	ENGINEERING ORDER	D412-664-243-E-2	SHEET 1 OF 1	NTS
DRAWN	P	CHECKED AS	MFG. APPR.	APPROVED MP	DE APPR.	***
DATE	11.09.07	DATE 11.09.19	DATE ((.09.19	DATE 11.09.19	DATE 11.09.19	

PURPOSE:

REPLACE MAGNOBOND WITH 3M DP460 SCOTCH-WELD EPOXY ADHESIVE

87294

CHANGE:

IS:

Item	Qty -243	Part Number	Description
9	A/R	SCOTCH-WELD DP460	EPOXY ADHESIVE, 3M SCOTCH-WELD

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023
			ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,
			TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 16, SHEET 1 IS AMENDED AS FOLLOWS:

IS

- 12) INSTALL D2896-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015. LET CURE FOR 24 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURED FOR 24 HOURS.

WAS:

- 12) INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



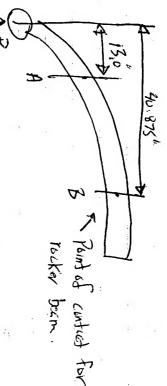
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CEUSHING OF 11412-664-243

Acceptability of 8th CRUSHING AT END OF BEND



3 I= 1.676 CZ134112 = (2561-2522)/ UD1 = 7.961, UD2 = 2.522 3 (fram Auto CAD) 1(294+2522) =8%

Bint 8: (1) = 3.307", I= 4.613 in4

B. P. T= P= 13×2.961/ = Px40.875x3.367/2.4613= 14.651.P 12:1:076 11.484-P

M.S. = 14.651/11.484-1= 6.27

is tube will brack at rucker beam bend 47 8% crushing; 8% Gushing in area at end contect before 47

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CLIENT A ETENTION	yiTU ITENO	LINDA LINDA				TIME AN	-
ATTENTION	127-100	DINFEN S	7	_ ACUREN JOB NO. PO/WO No.	188-10 17536 -	0 0 7	
ADDRESI	14A VOTA	uy ON		_ PO/VVO NO. WORK LOCATION	11850 SALE		
	11 IN PARTY 6	CEV I		-	15/m 1417/051-6	REV./DATE	2005
PROJECT	F	PI ON	_ CRO	SS TUSE			
ITEM(S) EXAMINED				cs			
JOB DESCRIPTION	N PRO	OCEDURE NO. LT	REV./DATE		ECHNIQUE NO. LT		2008
Part No.	SEE	ESULTS		MATERIAL ALL	ANINUM	THICKNESS (A	
SCOPE A C	DET FLOW	RESCENT		O PENEZ	RANT EXA	MINATIO	
jant	ON THE	100% 0	\mathcal{L}		<u> </u>		
TEST DETAILS				T.2		m	1.0
METHOD EAMILY RRAND	A FLUORESCE		ISIBLE	WATER WASH	SOLVENT I	REMOVABLE [☐ POST EMULSIFIED☐ ☐ AMBIENT < 2 fc
FAMILY BRAND PENETRANT		NIMUM DWELL TIME 4	(518 MIN.	LIGHTING EQUIP.	FLASHLIGHT 🗆 TROUBLE	ELIGHT OUTPUT	
PENETRANT REMOV	R. 970 MIN	NIMUM DRY TIME	>10 M IN.	OTHER LA	BINO		ATE TO COS
DEVELOPER TYPE	<u> MD S2 Min</u> MON AQUEOUS	NIMUM DWELL TIME AQUEOUS	10 Min. □ DRY	LIGHT METER S/N	1098866	CAL DUE D	ATE LOCAL
EST SURFACE	NON AQUEUUS	<u> </u>	_ 0.0				
JRFACT CONDITION		☐ AS WEL		☐ MACHINED	SHOT BLASTED		AN BARE METAL
	TURE □ < - 4°C/ 20°F □	☐ - 4°C/ 2 IMPERIAL)	0°F то 10°С/50	`F	□ 10°C/50°F TO 52°C/	1125°F U > 52	.°C/125°F
KECHITC.	Annual Control						,
RESULTS-	JUNETRIC UI	IVII CINICI	2 7 4 7 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				
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Clor	ale testin	.0. #	<u> </u>				
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11111111111111111111111111111111111111	57.BE W	7294)		LECA	ND ON THE TIME TO L	5 Closs/2 Enwe &	BE WD. CATTON
CROP	TO TUBE WAS A STANDED TO THE W	7294) 7296 7297 7293 6840 840 8840	ne of Acuren Group Inc.	based on information and ass	services extend beyond the perform	T8 mance of the requested service service and are not intended	ces. It is expressly mainstant nor can they be construed or
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Scope of Services See agreement of Acuren Grist all descriptions, commistent and acuren of order information p	roup Inc. to perform services extens and expressions of opinion reflees. Acuren Group Inc. is not assure revided by Acuren Group Inc. In no	7294) 7296 7297 7396 7396 7396 7397 7397 7397 7397 73	ns of Acuren Group Inc owner/operator and th c.'s liability in respect o	, based on information and ass e owner/operator retains comp of the services referred to herein	a services extend beyond the perform umptions supplied by the owner/apilete responsibility for the engineerin exceed the amount paid for such s	mance of the requested service and are not intended ing, manufacture, repair and services.	ces. It is expressly understand nor can they be construed or I use decisions as a result of the
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